

REMARKS

Applicants gratefully acknowledge withdrawal of the previous objection to the Abstract, the previous rejection under 35 U.S.C. 112, second paragraph, and the previous rejection under 35 U.S.C. 103(a).

Applicants' invention relates to monodisperse anion exchangers and their preparation by (a) reacting monomer droplets made from monovinylaromatic compounds and polyvinylaromatic compounds, as well as optional porogens and/or initiators, (b) amidomethylating the resultant monodisperse, crosslinked bead polymers with (methyl)phthalimide, (c) converting the amidomethylated bead polymers to aminomethylated bead polymers, and (d) alkylating the aminomethylated bead polymers.

Restriction Requirement

Restriction has been maintained under 35 U.S.C. 121 with respect to the Examiner's Group I (Claims 1-15, drawn to a process for making anion exchangers) and Group II (Claims 16-18, drawn to anion exchangers). Applicants hereby acknowledge election of Group I (Claims 1-15) without further traverse with respect to Group II. The non-elected claims of Group II have been canceled.

Rejection under 35 U.S.C. 103

Claims 1-15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patents 4,444,961 ("Timm"), 4,952,608 ("Klipper et al"), and 3,006,866 ("Corte et al '866"). Applicants respectfully traverse.

As pointed out in Applicants' previous Amendment, it is well established that "identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention." *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1316-1317 (Fed. Cir. 2000) (emphasis added). Failure to follow these precepts risks "fall[ing] victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher." *In re Kotzab*, 55 U.S.P.Q.2d at page 1316. None of the patents cited in the Office Action identifies all of the steps of Applicants' claimed process. Applicants maintain that even if their claimed process is "a compilation of generally known steps" as asserted at page 3 of the Office Action, it has not explained how knowledge of teachings of the cited patents would have suggested to those skilled in the art that these "generally known steps" should be

combined to arrive at the process claimed by Applicants. For example, the Office Action has not explained why steps relevant to homodisperse spheroidal polymers such as those disclosed in Timm should be followed by steps relevant to bead polymers such as those disclosed in Klipper et al and to heterodisperse polymers such as those disclosed in Corte et al '866.

Timm discloses the preparation of spheroidal polymer beads by a method that is mentioned in the present application as one way to prepare monodisperse, cross-linked vinylaromatic base polymers according to Applicants' step (a). See specification at page 2, lines 27-32. Nevertheless, this does not mean that one skilled in the art would have been motivated to use this particular method as a starting point to be followed by the specific additional processes of steps (b), (c), and (d). Timm, for example, teaches that the disclosed polymers can be used to prepare ion exchange resins, for example, by haloalkylation and subsequent amination or by sulfonation (e.g., column 14, line 44, through column 15, line 37) but does not disclose or suggest Applicants' steps (b), (c), or (d).

The Office Action relies upon Klipper et al with respect to Applicants' steps (b) and (c). Applicants maintain that Klipper et al would not lead those skilled in the art to their process as a whole. Klipper et al does disclose the preparation of anion exchangers by catalytic reaction of N-hydroxymethylphthalimides with a polymer precursor in the presence of swelling agents to form an amidomethylated polymer that is subsequently converted to the corresponding aminomethylated polymer. E.g., column 2, lines 6-26. Klipper et al, however, does not disclose monodisperse bead polymers or suggest their use for the preparation of corresponding monodisperse aminomethylated polymer products, a critical feature of Applicants' process. Furthermore, Klipper et al does not disclose alkylation of the aminomethylated polymers such as required in Applicants' step (d).

The Office Action relies upon Corte et al '866 with respect to Applicants' step (d). Applicants maintain that Corte et al does not provide the requisite motivation to lead those skilled in the art to their claimed process as a whole. Corte et al '866 discloses a method for aminoalkylating aromatic polymers by catalytic reaction with chloromethyl phthalimide and subsequent conversion of the resultant aminomethylated polymer to the corresponding aminomethylated polymer, which can

optionally be alkylated. E.g., column 2, line 50, through column 3. Corte et al '866, however, does not disclose beads, much less monodisperse bead polymers, and does suggest their use for the preparation of monodisperse alkylated amino-methylated polymer beads, another critical feature of Applicants' invention.

Applicants maintain that the cited references do no more than describe individually bits and pieces of Applicants' process without tying them together. Timm discloses a preparation of spheroidal polymer beads but does not disclose a subsequent sequence of amidomethylation, conversion to aminomethylated bead polymers, and alkylation. Klipper et al discloses amidomethylation and conversion to corresponding aminomethylated polymers but does not mention monodisperse polymer beads or subsequent alkylation. Corte et al '866 discloses alkylation of amino groups but teaches a different amidomethylation method and does not even remotely suggest monodisperse polymer beads. Applicants maintain that the cited references fail to provide sufficient motivation to combine the various steps into a unified overall process for preparing monodisperse bead anion exchangers as claimed by Applicants.

Applicants therefore respectfully submit that their claims are not rendered obvious by the combination of Timm, Klipper et al, and Corte et al '866.

In view of the preceding amendments and remarks, allowance of the claims is respectfully requested.

Respectfully submitted,

By Richard E.L. Henderson
Richard E.L. Henderson
Attorney for Applicants
Reg. No. 31,619

Bayer Corporation
100 Bayer Road
Pittsburgh, Pennsylvania 15205-9741
(412) 777-8341
FACSIMILE PHONE NUMBER:
(412) 777-8363

/jme/RELH0290

ANNOTATED VERSION OF AMENDMENTS

IN THE CLAIMS:

Claims 16-18 have been canceled.